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Practical Pharmacy Edition

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OBSERVATIONS OF A GLOBE-TROTTER

Sirs:

I am herewith applying for renewal of my membership in the A. PH. A. . . . When we landed in New Zealand late in 1942 . . . I presented my A. PH. A. card and was really welcomed as a brother chemist. I enjoyed watching the preparation of British pharmaceutical items according to the B. P. The pharmacists there are members of a guild and such notice is put on the window of the establishment. They have a very stringent apprenticeship, after which the aspirant attends a technical school to get his degree in pharmacy. The drugstores are very neat and well organized. Working hours are from 8 a. m. to 6 p. m. and closed on Sunday.

Their journal is the *Australasian Journal of Pharmacy*. The copies which I saw contained an interesting presentation of the pharmacy rules and regulations enacted during the latest parliamentary session. American progressiveness in the pharmaceutical field was also discussed and the AMERICAN PHARMACEUTICAL ASSOCIATION and Dr. Swain were quoted.

The next stop was New Caledonia, Noumea, where we encountered the Free French. I had a nice visit in the larger of the two chemists' shops, which had a good but antique setup—suspension balance, iron mortar and pestle, and plenty of crude drugs.

I spent three months on this island, and then went on to Guadalcanal, the Russell Islands, Vangunu Island, Segi Point and Rendova. We serviced all branches of the service here and saw plenty of action but when the Munda situation quieted down we came back to the States.

I was then stationed at the Brooke General Hospital . . . and had a chance to visit the local pharmacies and see how pharmacy is practiced in Texas. Then I was transferred to my present post at a prisoner of war camp. There are plenty of not-so-super Nazis here. We have a very nice pharmacy setup at the station hospital, using strictly U. S. P. and N. F. preps and some pet prescriptions of the Nazi doctors.

Looking forward to receiving the Practical Pharmacy Edition of the A. PH. A. JOURNAL and thanking you for past favors, sincerely,

Hospital Pharmacy — SGT. JOSEPH H. RUTGARD
Alva, Okla.

PRACTICING WHAT WE PREACH

Sirs:

I have at hand a recent issue of the JOURNAL (6:48, 1945) and I think Mr. Bohrer should be congratulated on his fine article entitled "Are Pharmacists Overeducated?" After devoting the past few years to true pharmacy, every hour practicing that which I studied in college, I have come to several conclusions.

First, we as pharmacists do not usually have the equipment to which our hands had been accustomed in school, where we took our primary training. How many pharmacists have a real pill tile properly marked, spatulas of various sizes and shapes, graduates of many sizes, mortars and pestles of different capacities, percolators, ring stands, a balance for very accurate and fine work, or other equipment that could be mentioned?

Some states require a minimum amount of equipment necessary to open a drugstore. Yes, a minimum amount—but do many of us stock a maximum?. . .

Secondly, we are taught to make emulsions, syrups, tinctures and every other form of drugs. But when we enter our stores we dispense these same drugs commercially prepared and under a dazzling and diverse nomenclature. Many of the preparations can be prepared by the pharmacist himself if he has a little gumption. Why is this not the procedure? I don't know unless we *want* to be middlemen.

Last month alone we made 18,000 tablets by hand; used them for prescriptions and packaged products. We sold several gallons of mouthwash which we made. And I could name many more. It looks hard to bring much of this pharmacy back to the drugstore, but truthfully it is very simple.

The solution to this problem partly lies in the schools. For one thing, student classes would benefit by more frequent visits from practicing pharmacists for discussion of professional slants on actual drugstore operations. Even after graduation I think we should spend several hours a week meeting with professors and other retail pharmacists in each area, discussing trends of pharmacy and methods of manufacturing various preparations. . .

1979 E. 82nd St. — MILTON DAWSON
Cleveland, O.

The Hospital Pharmacist

GUEST EDITORIAL

by LEO F. GODLEY

AMERICAN SOCIETY OF HOSPITAL PHARMACISTS

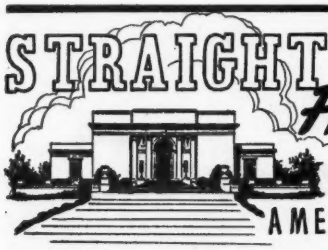
THE 1944 résumé of hospital service in the United States as compiled by Arestad and Westmoreland in the *Journal of the American Medical Association* for March 31 of this year included data on the total number of hospital pharmacists in the nation. That our value has been established in the opinion of competent administrators is confirmed by the fact that we have more than doubled our strength in less than ten years. In 1936 there were 1901 hospital pharmacists. In 1944 there were 3600 plus over a half thousand part-time pharmacists distributed as follows:

States	Pharmacists Full Time	Pharmacists Part Time	States	Pharmacists Full Time	Pharmacists Part Time
Alabama	49	12	Nebraska	36	9
Arizona	36	1	Nevada	10	2
Arkansas	31	2	New Hampshire	10	2
California	377	72	New Jersey	102	21
Colorado	58	4	New Mexico	36	1
Connecticut	44	9	New York	416	57
Delaware	8	2	N. Carolina	72	18
Distr. of Colum.	29	4	N. Dakota	7	0
Florida	105	9	Ohio	120	27
Georgia	87	8	Oklahoma	52	6
Idaho	10	2	Oregon	28	7
Illinois	215	28	Penna.	183	57
Indiana	64	12	Rhd. Island	26	8
Iowa	50	5	S. Carolina	51	4
Kansas	52	13	S. Dakota	9	6
Kentucky	34	3	Tennessee	62	10
Louisiana	77	1	Texas	220	22
Maine	22	3	Utah	21	4
Maryland	61	10	Vermont	7	1
Massachusetts	148	19	Virginia	73	7
Michigan	102	19	Washington	97	11
Minnesota	49	15	W. Virginia	19	5
Mississippi	45	4	Wisconsin	68	25
Missouri	103	14	Wyoming	10	..
Montana	9	2	Total	3600	583

The increase in hospital pharmacists seems to have varied in direct proportion to the increase of in-patient care. There were approximately seven million admissions in 1936 compared with sixteen million in 1944. It does not necessarily follow that the number of hospital pharmacists must increase when there is an increase of hospital patients. Not yet. There are still hundreds of hospitals serving large areas that do not employ a hospital pharmacist. In many states there was no law sufficiently stringent to assure professional pharmaceutical service for these sixteen million hospital patients who were admitted to the hospitals of the nation in 1944. There will be no such protection for many millions who will be hospitalized in 1945. Often the patient is assured that public safety only if he remains at home. Ironical, but true.

That there has been a twofold increment of hospital pharmacists without widespread legal inducement is proof that we have created a necessary block in the hospital's functional diagram.

It's up to us who are among these 3600 hospital pharmacists to illuminate our escutcheon with more of the light that has made hospital pharmacy a specialty. Poor service is probably worse than none. That pharmaceutical practice in the hospital be covered by the same laws as retail pharmacy, that every hospital pharmacist actively support the American Society of Hospital Pharmacists and in turn the American Pharmaceutical Association, that a set of minimum standards for hospital pharmacies be made mandatory, and that pharmacists keep abreast of the rapid evolution of medicinal trends—these are the only paths that lead to the finish and esteem we unanimously covet.



STRAIGHT FROM HEADQUARTERS

By ROBERT P. FISCHELIS, Secretary
AMERICAN PHARMACEUTICAL ASSOCIATION

AS this is written, Washington is a hushed and strangely quiet city. Its offices and shops are open but there is no hilarity. Men and women go about their business seriously and pleasantly enough but there is something subdued in the atmosphere which no one stops to analyze or explain. It is simply there, and everyone knows why.

As the business of the day is completed, one snaps on the radio and soft music, beautiful music, prayers, and serious talk come over the air. One is painfully aware of the absence of the usual quips and jests and of the customary commercials.

For a few brief days the atmosphere is tense, the tone of conversation is apprehensive. Thoughts seem more plentiful than words, and words seem to be spoken more deliberately. The cause of it all can be summed up in four words. The President is dead.

From that March day of 1933 when his inspiring inaugural message rang out from the nation's Capitol to every nook and corner of our country and brought renewed courage to a faltering people deep in the slough of economic depression, until the day of his sudden death, the spotlight was turned on Franklin Delano Roosevelt.

Idolized during his lifetime by large groups of our population, and cordially hated by others; loved and respected by the people of many nations as the symbol of the good neighbor policy and the saviour of the oppressed and war-stricken; feared and despised by dictators and war-mongers—he now belongs to the ages. History will pass judgment on the significance of his administration of the affairs entrusted to him.

Before these words will appear in print, Franklin D. Roosevelt will have been laid to rest on the banks of the Hudson, and Harry S. Truman's voice will have become familiar to radio audiences. The nation will have begun to adjust itself to the new leadership and anxiety will have given way to concentration on the daily tasks. The European phase of the war will have reached its last stages and the San Francisco Conference may even have completed its work of charting the future cooperative course to be followed by the participating nations. The world goes on.

We in the field of pharmacy can look back to the Roosevelt regime as a period of unprecedented progress and prosperity. The present Food, Drug and Cosmetic Act was an outstanding accomplishment of his administration. Even the most vocal opponents of this legislation at the time it was proposed now agree that its effect on the drug industry has been all to the good. Pharmacy has made great strides during the Roosevelt years of peace and has contributed largely to the practical application of advances in medical science in the years of war.

We have seen a new coordination of research facilities and brains in solving the problems of medical care. As a result of the pooling of information and able scientific and technical leadership, we have learned how the evaluation of new drugs may be hastened and their production and distribution expedited.

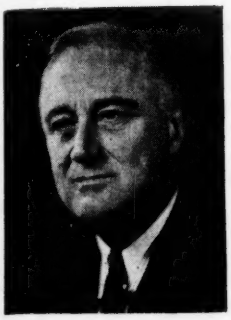
During the Roosevelt presidency medical care was the subject of more far-reaching discussion and action than ever before, and there is much evidence of greater public understanding of its problems. This can lead only to more and better care for more and more people.

The pharmaceutical profession and the drug industry have profited in prestige and in dollars since 1933. We firmly believe that such gains will continue if the experiences of recent years are not ignored.

The AMERICAN PHARMACEUTICAL ASSOCIATION is proud of President Roosevelt's interest in its affairs as described elsewhere in this issue of the JOURNAL. In company with uncounted millions the world over, it mourns the loss of a great humanitarian, a great president, a great American.

"I EXPRESS MY APPRECIATION OF THE GREAT WORK WHICH YOU HAVE ACCOMPLISHED IN CONTRIBUTING TO IMPROVED STANDARDS, NOT ONLY IN PRODUCTS BUT IN PROFESSIONAL EDUCATION AND IN PROFESSIONAL INTEGRITY, AND IN PUTTING AMERICAN PHARMACY IN THE FOREFRONT OF THE WORLD"

ROOSEVELT



THE official period of mourning for the late President Roosevelt has passed but in the hearts of millions, regardless of political affiliation, remains the feeling of both a personal and national loss. To those in the professions his death means more particularly the loss of a President who had an appreciation of and interest in the sciences. Among these was pharmacy.

In the early thirties President Roosevelt watched with approval the erection of the imposing marble building, located on historic Constitution Avenue about a half mile from the White House, that was to be the AMERICAN INSTITUTE OF PHARMACY—home of the AMERICAN PHARMACEUTICAL ASSOCIATION and center of professional activities. At the time of the dedication in 1934, President Roosevelt said:

"It is with real pleasure that I extend my congratulations and my best wishes to the American Pharmaceutical Association, and to the profession of pharmacy, on this occasion. The dedication of this beautiful structure appropriately located here in the Nation's capital as the headquarters of your Association is an important milestone in its history.

". . . I express my appreciation of the great work which you have accomplished in the past in contributing to improved standards, not only in products but in professional education and in professional integrity, and in putting American pharmacy in the forefront of the world. . . .

"You have cooperated with the medical profession in joint endeavor to prevent and cure illness, lessen suffering and restore to usefulness and happiness the afflicted of all lands; and you must feel a justifiable pride in making such a contribution to human welfare."

Two years later, in connection with Pharmacy Week, the President wrote: ". . . I am especially gratified to learn that National Pharmacy Week is not an annual gathering devoted primarily to the commercial aspects of a vast national enterprise. It is clear to me that so long as pharmacists are interested in high educational qualifications and imbued with the ideal of service, the esteem in which its members are held will be steadily enhanced. As a close and dependable ally of the medical profession the pharmacist is an important factor in restoring to health the millions who unfortunately become ill."

From 1939 until his death, President Roosevelt made such messages to the AMERICAN PHARMACEUTICAL ASSOCIATION an annual custom. Here are excerpts which reveal his interest in and appreciation of the profession's services:

1939 "In extending hearty congratulations to the retail druggists of the country who will observe National Pharmacy Week from October twenty-second to twenty-seventh, I wish to direct the attention of the public to the essential public health function so ably performed by American pharmacists. To them falls the task of making nature's gifts available to man. The observance of National Pharmacy Week should command attention from the public generally, for the everyday services of the American pharmacists have helped immeasurably in safeguarding the health of the nation."

1940 ". . . The druggist in our country, because of his location in every town and hamlet, should provide a valuable asset to the health authorities in every state. Your increasingly high standards help to make the pharmacist more valuable in this regard. It is heartening to see your Association assume and exercise the responsibility among

your members, for at this time health will play a tremendous part in our preparation for national defense."

1941 "Once again it is my pleasure to extend my greetings to the members of the American Pharmaceutical Association. I want you to know that I appreciate very much the splendid cooperation that your organization and its members have given to the medical services of the Government during this past year. . ."

1942 ". . . National Pharmacy Week serves a useful purpose in calling attention to the contribution that pharmacists have made in the nation's war effort. I am grateful for the fine work accomplished by the members of your Association and I look forward with confidence to their continued support."

1943 ". . . Will you be good enough to extend for me my most sincere thanks to the American Pharmaceutical Association for the splendid work they have done in the war effort.

"The high spot of this has been the collection of small quinine stocks throughout the Nation. I am advised that this amount exceeds four tons. In view of the marked shortage of this critical drug, you have done a very great act in bringing about the collection of this drug and turning it over to the Armed Services. . . ."

1944 "It gives me real pleasure to extend my sincere greetings to the members of the American Pharmaceutical Association on the occasion of National Pharmacy Week. . . . I want to express my appreciation for the splendid work that has been done by this Association for the Army and the Navy during this past year."

Not only was President Roosevelt aware of the importance of the quinine pool as expressed in his 1943 message, when the scarce drug was so urgently needed by the armed forces, but he himself was one of the contributors. In addition to contributing the small stock of quinine from the White House dispensary he sent in a large shipment given him by the president of Peru. On this occasion President Roosevelt commented: ". . . the Republic of Peru very generously sent me a consignment of one hundred pounds of this indispensable drug. It seems to me that I cannot better fulfill the spirit of this neighborly gift than by turning it over to the National Quinine Pool."

Later it was President Roosevelt who signed the Pharmacy Corps bill despite the expressed opposition of the Army. It was he who actively supported the passage of the new Food, Drug and Cosmetic Act over strong opposition.

Thus in many ways, in word and deed, the late President encouraged the advancement of the pharmaceutical profession. In the larger view he was also acutely sensitive to the impact of scientific progress on the social and economic life of America.

In an address prepared just before his death and intended for delivery on Jefferson Day President Roosevelt wrote: "Thomas Jefferson, himself a distinguished scientist, once spoke of the brotherly spirit of science, which unites into one family all votaries of whatever grade, and however widely dispersed throughout the different quarters of the globe.

"Today, science has brought all the different quarters of the globe so close together that it is impossible to isolate them one from another.

"Today we are faced with the pre-eminent fact that, if civilization is to survive—we must cultivate the science of human relationships—the ability of all people of all kinds, to live together and work together in the same world, at peace."

With the President at Warm Springs during the last days, and one of those at his side after he was stricken, was Lt. Comdr. George A. Fox, White House pharmacist. Comdr. Fox, a member of the Navy's Hospital Corps and a registered pharmacist in the District of Columbia, customarily accompanied the President as a medical aide on his many journeys during the more than twelve years that he held office. As the pharmacist most closely associated with the late President, it is altogether fitting that Comdr. Fox should express the farewell thoughts of the profession as he has kindly and admirably done in the statement appearing on the next page.

—Radiogram—

AMERICAN PHARMACEUTICAL ASSOCIATION
2215 CONSTITUTION AVE., WASHINGTON, D. C.

WE LEARN WITH THE DEEPEST REGRET OF THE DEATH OF PRESIDENT ROOSEVELT. WE MOURN WITH YOU THE PASSING OF ONE OF THE GREATEST STATESMEN OF ALL TIMES.

WELLS, PRESIDENT
PHARMACEUTICAL SOCIETY OF GREAT BRITAIN

THE WHITE HOUSE
WASHINGTON

April 25, 1945

Gentlemen:

There were many facets to the character of the late President Roosevelt. The statesman, who was a leader in international councils; the Commander in Chief, who directed vast military operations on land, on sea, and in the air, had also broad humanitarian interests and sympathies.

Ever full of compassion for all who suffered, he was prompt to recognize the practical value of the quinine pool established by the American Pharmaceutical Association to conserve that precious asset in aid of the war. His endorsement of the idea of a quinine pool gave the campaign the impetus it needed. Invaluable in peace and indispensable in war, nearly 10,000 pounds of quinine were made available for the medical services of the Armed Forces.

President Roosevelt had a sincere interest in the arts and sciences. That he recognized the efforts of pharmacy toward improvement of medical care for the American people is clear from his messages to the American Pharmaceutical Association at various times during his administration.

Although we mourn the loss of a great leader, the profession must dedicate itself with renewed energy to aiding the war effort and building a better peacetime America, as President Roosevelt would wish us to do.

Very sincerely yours,

George A. Fox

GEORGE A. FOX
Lt. Comdr. (H.C.)
U. S. Navy

American Pharmaceutical Association,
2215 Constitution Avenue, N. W.,
Washington 7, D. C.

NEW KNOWLEDGE OF BLOOD PROTEINS AND THEIR USES

by EDWIN J. COHN

DEPARTMENT OF PHYSICAL CHEMISTRY, HARVARD MEDICAL SCHOOL

THE AUTHOR, Dr. Cohn, received the Passano Foundation Award of $5000 on May 16 for his distinguished research on blood and blood proteins, which started in 1919 and progressed to the fractionation of plasma into the important components described in this paper. Dr. Cohn was chosen for the award through a nationwide poll among leaders in medical science.—THE EDITOR.

INFORMATION FOR PHARMACISTS ON POSTWAR PRESCRIPTION PRODUCTS, FRACTIONATION OF BLOOD YIELDS ARRAY OF THERAPEUTIC AGENTS

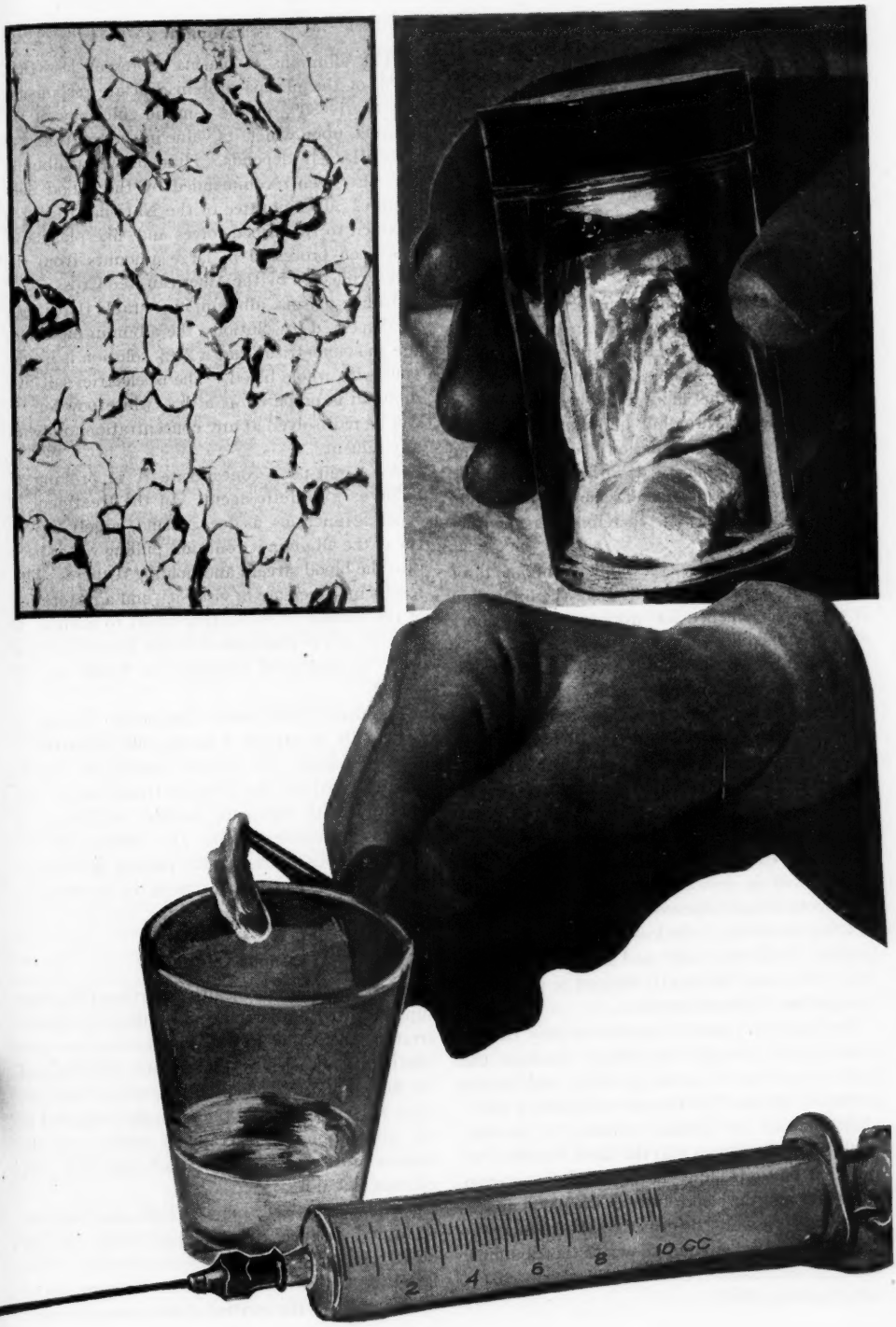
THE Blood Substitutes Subcommittee of the National Research Council has carefully and critically examined the properties of every blood substitute that has been suggested; it has thus far recommended only products derived from human blood. Whole blood itself and plasma were well-known therapeutic remedies before the war and their value has been further proved in military theaters.

Whole blood is especially needed when there has been severe blood loss or when major operations are to be performed in which severe blood loss is anticipated. The red cells responsible for the respiratory function of the blood, carrying oxygen to the tissues, are also needed to combat the anemia which frequently occurs in convalescence from wounds. The therapeutic value of the red cells is thus related to physiological functions. The therapeutic value of other constituents of blood may also be related to their physiological functions.

The lability of whole blood made it necessary to prepare for this war by accumulating reserves of the more stable components of blood. However, work continues in many laboratories in an attempt to increase the life span of the labile cellular constituents of blood to render them available over longer periods of time. Progress in the preservation of red cells both in whole blood and in media in which they can be resuspended may be expected to continue at an accelerated rate because of the methods that are being developed and the knowledge that is being gained.

Many of the conditions for which whole blood transfusions are used, notably where there is a need for the red blood corpuscles, can probably be successfully provided for by resuspended red cells. Other needs may be satisfied by the injection of plasma or of a plasma fraction. The longer life of

FIBRIN FOAM, prepared from human fibrinogen and thrombin, is shown on the next page (upper right) in the dry state as supplied to physicians. The honeycomb structure of the foam as revealed under the microscope and in the photograph (upper left) has the appearance of loosely meshed fibers. This porous matrix is soaked in thrombin solution before application (below) and serves to hold the thrombin in the area of hemorrhage until clotting is completed. Used in this manner, fibrin foam with thrombin is proving to be a superior absorbable hemostatic agent in many types of operations to control bleeding from oozing surfaces and veins.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the red cell in whole blood—longer than when resuspended in any medium at present known—makes it necessary to fly whole blood to our armed forces whenever possible. The social economy of using cells and plasma separately in the therapy of different conditions, if either can be demonstrated to be as satisfactory as whole blood for the conditions indicated, is, however, so advantageous as to demand consideration in the postwar world.

Plasma

The separated plasma can be stored in the liquid state, can be frozen or can be dried from the frozen state. In the liquid state it retains the colloidal properties necessary for the treatment of shock, but the more labile components of plasma, the prothrombin and fibrinogen (concerned with blood coagulation), complement and the antibodies (concerned with immunity) deteriorate with time. For an economical civilian program liquid plasma, therefore, has distinct limitations.

In the frozen state, the labile components of plasma are better preserved; here the limitation is the inconvenience for storage and transport and for immediate emergency use.

In the dried state, most of the labile components of plasma are preserved. Dried plasma processed to a stable state from the blood collected by the American Red Cross has been used by our armed forces since, like other dried products, it can be accumulated as a reserve against need at a future time and place.

Plasma was accumulated in this war largely for the prevention and treatment of shock. Shock as observed in military medicine generally results from a rapid decrease in the volume of circulating blood due to the loss of blood and plasma proteins, both externally and into damaged tissues. It is most frequently treated or prevented by injection of plasma proteins.

The injected proteins, insofar as they cannot readily pass through the kidney, increase the body's reservoir of plasma proteins; and insofar as they do not readily traverse the capillary walls, they increase the plasma volume by drawing water from the tissues into the blood stream. The function of controlling the equilibrium between the water and the electrolytes in the blood and in the tissues is largely performed by the smaller proteins of the blood stream, known as the albumins, although all dissolved colloids will of course exert some osmotic effect.

Albumin

The albumins of plasma represent less than 60% of the plasma proteins but are responsible for nearly 80% of the osmotic efficiency of the plasma, upon which its value in the treatment of shock largely depends. Human serum albumin has also been recommended by the Blood Substitutes Subcommittee of the National Research Council to the armed forces and, like plasma, it has been processed in large amounts from the blood collected by the American Red Cross.

Unlike plasma, albumin is so stable that it can be dispensed in solution; the albumin molecules are so symmetrical that a 25% solution is isoviscous with whole blood. The isoelectric, salt-free albumin is prepared as a dry, white powder; it can be redissolved at any concentration and with any diluent.

As a salt-poor concentrate it is proving of value as a diuretic agent. In the treatment of shock it functions, as does plasma, largely by virtue of the albumin it contains, pulling water back into the blood stream and holding it there. This results in a decrease in viscosity and a restoration of the volume of circulating blood to normal, so that oxygen is transported to the tissues and the other physiological functions of blood are resumed.

Traumatic shock occurs frequently enough in civilian life, as a result of automobile, industrial or other accidents, to warrant peacetime society making provision for prompt treatment of this condition with adequate supplies of plasma or plasma derivatives. But the control of certain infectious diseases with plasma derivatives appears to offer at least as great an opportunity for civilian medicine.

Gamma Globulins

A large scale public health experiment has now supplemented earlier clinical studies in demonstrating the value in the modification or prevention of measles of the gamma globulins of the human plasma, which are separated from the same plasma as yielded the albumin employed in the prevention and therapy of shock[1]. Of the plasma proteins about 58% is albumin and 11% gamma globulin.

Two fractions of gamma globulin may also be separated, the one richer in euglobulin and the other (Fraction II) in pseudoglobulin. The latter fraction, which has thus far been employed in the study of the control of infectious diseases,

represents approximately 5% of the plasma proteins. Nevertheless, gamma globulin may come to be recognized as the most important fraction of plasma from the point of view of public health.

Pooled normal or convalescent plasma has long been used in the control of certain infectious diseases. Many of the antibodies to the variety of infectious diseases to which the population contributing the blood has been exposed are gamma globulins. Moreover it has been possible to demonstrate that a population shows heightened immunity following an epidemic of a special disease.

The concentration of gamma globulin antibodies thus far achieved by fractionation is approximately twenty-five times that of pooled plasma, if we compare plasma with the concentrated solution of gamma globulins being made available to the armed forces and through the Red Cross to public health agencies[2]. As a result, titers of certain antibodies, though not neeessarily of all, are comparable to those of the corresponding convalescent sera.

Therefore, in the prevention or treatment of any disease where the value of convalescent serum has been demonstrated, the effectiveness of a concentrate from pooled normal plasma should be investigated. If convalescent serum, or hyperimmune serum is fractionated, still higher antibody titers may be obtained in the concentrated gamma globulins.

The antibodies effective in the modification or in the prevention of measles are present in the more soluble fraction (Fraction II) of the gamma globulins. This is true also of the antibodies for several other virus diseases. Effective use of the gamma globulins in the control of diseases other than measles has been reported. Should these preliminary studies be substantiated by large scale military or public health investigations, the need for gamma globulin may prove even greater than has thus far been anticipated.

None the less it should be stressed that in the case of many diseases those bearers of immunity which are the antibodies of the blood stream cannot be made available in amounts large enough, or injected soon enough, to prevent the onset of disease. In others, the incidence of the disease in susceptibles is so small that it would be necessary to immunize passively an entire population in order to offer protection to the one in a thousand who might contract the disease. The blood donors for such an undertaking might not always be available, whereas blood donors conscious of the contribution that they were making to the control of other diseases could always be counted on in a society which has responded as has ours to the blood donor program.

Chemical Problems

Two problems which are chemical, rather than clinical, have thus far limited studies to determine the most effective use of the gamma globulins. The progress that is being made, however, suggests that both are yielding to systematic scientific investigation.

The first problem is concerned with the removal of depressor substances which have heretofore prevented the intravenous use of gamma globulin concentrates. Conditions for the separation of these substances and thus for the preparation of gamma globulins safe for intravenous use appear to have been found, however. Appraisal of the value of gamma globulin intravenously injected for diseases where larger amounts may be needed than can conveniently be administered intramuscularly has begun. Intravenous injections of 25 cc. have been given to small children with acute infections without reaction and 50 cc. to children not acutely ill.

The injection of a concentrate of gamma globulin equivalent to the amount which could be introduced as plasma or whole blood only by replacing the entire blood volume by transfusion would thus appear to be both possible and practicable. Chemical specifications for the routine production of such preparations are, however, not yet completely satisfactory.

The second chemical problem requires the separation of the gamma euglobulins of the plasma (in Fraction III-1) from the isoagglutinins (blood typing globulins), cholesterol and carotenoid-bearing beta globulins, so that clinical investigations with this potential source of antibodies may also be begun. The O typhoid agglutinin has been found concentrated in this fraction rather than in Fraction II. The possibility exists, how-

[1] The program of plasma fractionation which has been developed in this laboratory was originally supported by grants from the Rockefeller Foundation and from funds of Harvard University. It was aided early in 1941 by grants from the Committee on Medicine of the National Research Council, which included a grant from the American College of Physicians. Since August, 1941, it has been carried out under contract, recommended by the Committee on Medical Research, between the Office of Scientific Research and Development and Harvard University. The insight of my many fellow workers in this department has been immeasurably aided by many colleagues (chemical, clinical, immunological and pathological)—members of this and other universities, of the armed forces, of committees of the National Research Council, of the American Red Cross, and of the commercial laboratories with Navy contracts for plasma fractionation, who labored with us. Indeed, it would be impossible to list here the very large number of individuals and agencies who have collaborated in this work.

[2] See *J. Am. Med. Assoc.*, 125:635, 638, 1944.

ever, that subfractionations of the gamma globulins may yield, in time, products derived from the same plasma, some of which are more potent concentrates of certain antibodies; some of others.

Fractionation

The fractionation process that we have developed yields all of the components of human plasma in five major fractions. The number has purposely been made as small as possible to facilitate and render economical large scale processes. We shall not discuss here the five-variable physicochemical system upon which the separations depend except to state that it involves the principles that determine electrostatic interactions between proteins and neutral salts, which generally lead to increased solubility and interactions with less polar organic liquids, which in turn generally lead to precipitating action. The balance between these forces has made possible the definition of conditions leading to far sharper separations than have previously been possible.

The theory and general methods, though not the detailed procedures, are equally applicable to plasma and to tissue extracts of plant or animal origin; that is, to all systems in which a large number of protein and lipid components are to be separated from each other and without loss of the biological activity upon which their therapeutic value depends.

When the method is applied to plasma, the fibrinogen, which is the structural element of the blood clot, is concentrated in Fraction I. Fraction II + III contains essentially all of the prothrombin, which, converted to thrombin, transforms fibrinogen into fibrin; all of the immune globulins for which tests have been carried out; the isohemagglutinins and Rh antibodies, of value in blood grouping, as well as all of the carotenoids and such part of the cholesterol and phosphatides of plasma as appear to be associated with beta rather than alpha globulins; the midpiece of complement; and probably innumerable other components of plasma which are not yet recognized by their chemical or biological properties. The remaining globulins are concentrated in Fraction IV.

Isohemagglutinins

Isohemagglutinins have also been prepared under contract with the Navy because of the value of these products of the fractionation of group specific plasma in the typing of whole blood. The products that have thus far been prepared commercially have been fractionated respectively from pools of A or of B plasma. The presence of roughly four times as many A as B donors in our population, has heretofore introduced an uneconomical factor in the preparation of blood-grouping globulins from human plasma.

Recently one of my collaborators has suggested and demonstrated the value of another method of segregating the plasma in pools for the preparation of isohemagglutinins. In this method the smaller number of B bloods are used to absorb the A anti-B agglutinins from O blood. The resulting fractionated and purified isoagglutinins are not only group specific but are far more avid with respect to the B anti-A_2 and A_2B subgroups than the B anti-A agglutinins prepared from B plasma. And, of course, approximately five times as much of the product is obtained from an equal number of grouped bloods. This process thus makes available an almost equivalent amount of B anti-A and of A anti-B grouping material and greatly increases the economy of the preparation of these highly potent, blood-grouping globulins.

Alpha and Beta Globulins

The alpha and beta globulins concentrated in Fraction IV have recently been subdivided into two fractions, both sufficiently stable to be dried from the frozen state and reconstituted as clear soluble protein concentrates. One of these subfractions (IV-1) contains the remaining lipids of the plasma which, in this preparation, appear to be associated with alpha globulins, largely with $alpha_1$ globulins. The remainder of Fraction IV, tentatively designated IV-3, 4, is almost free of lipids, though rich in alpha and beta globulins and is subject to further subfractionation in the interest of concentrating and purifying the diverse components which it contains.

In this process, all of the proteins in plasma concerned with the coagulation process are concentrated in Fractions I and III-2; the immune globulins in II and III-1; the lipoproteins in III-1 and IV-1 and the albumin in Fraction V, which represents approximately 50% of the plasma proteins. Since the albumin in this fraction makes by far the largest contribution to the colloid os-

motic pressure of plasma, fractionation yields albumin to perform this function and other fractions to be employed in therapy in connection with more specific physiological functions.

Not only has Fraction II been prepared in a state safe for intravenous use in recent months, but so also has Fraction IV-3, 4. What are the physiological functions and what are the therapeutic uses of this large fraction, rich in alpha and beta globulins, poor in lipids and antibodies and in components of the coagulation mechanism? The chemist is fulfilling his function when he makes these alpha and beta globulins available in soluble, stable and safe form for intravenous use. We can depend on our clinical colleagues, armed with these tools, to determine the functions of these substances in the economy of the body and to discover their uses in therapy.

Fibrinogen, Thrombin and the Uses of Fibrin Products

In the subfractionation of Fraction II + III to yield the gamma globulin antibodies in Fraction II, prothrombin is of necessity first separated in Fraction III-2. Prothrombin may be converted to thrombin with human thromboplastin, and large amounts accumulated and made available as a sterile dry powder ready for reconstitution and immediate emergency use.

For stopping the flow of blood in surgical procedures, thrombin is the only component of the clotting mechanism which must be supplied. For the most effective use of thrombin in hemostasis, however, it must be applied with a matrix which can hold the thrombin in the bleeding area until clotting is completed. A porous matrix soaked in thrombin solution can achieve this mechanical result. Fibrin foam is such a matrix formed from human fibrinogen and thrombin. It effectively controls bleeding from oozing surfaces and from veins, even very large ones. Though not recommended for brisk arterial hemorrhage, it has proved very effective in neurosurgery in controlling hemorrhage from the dura, from tumor beds, from dural sinuses, and from large cerebral veins.

In general surgery fibrin foam has been reported effective, in a small number of patients, in controlling hemorrhage from the cut surface of the liver and kidney, in jaundiced patients, in thoracic operations, and in stopping bleeding in hemophilia.

Physical Properties Controlled

In the dry state fibrin foam is a porous material composed of strands of fibers separated by air spaces of macroscopic size. It readily absorbs water, saline, or thrombin solution, and can be used in conjunction with a sulfa drug or with penicillin. The physical properties of the foam can be varied by controlling the conditions of manufacture.

Since fibrin foam is prepared completely from human proteins and is rapidly absorbed with minimal tissue reaction, it may be left in place, thus preventing recurrence of bleeding. It is easily handled in the operating room and, like serum albumin, is immediately available for use in emergencies.

Just as the asymmetry of certain synthetic polymers is responsible for the remarkable mechanical properties of industrial plastics, the fibrinogen molecule endows products of this human protein with remarkable mechanical properties. Among these products is fibrin film.

Fibrin film may be prepared from fibrinogen and thrombin as a strong, rubbery sheet which can be stretched reversibly from two to three times its original length. This material can be made in various shapes and thicknesses and in the form of seamless tubing. Its mechanical properties can also be varied from a soft, rubberlike elasticity to a parchmentlike consistency.

The mechanical properties of the soft, rubbery films (as shown by their stress-strain curves) bear a marked similarity to those of the elastic ligament of the neck, the *ligamentum nuchae*. The tough films with delayed elasticity resemble rather wool or hair in their mechanical properties. It may be possible to imitate, with different types of fibrin products, still other natural structures of the body.

The fine structure of fibrin film has been shown to involve pores which in one type are of the order of 60 Angstrom units in diameter. Hemoglobin molecules in solution pass through these pores readily, but plasma globulins are partially and fibrinogen molecules completely retained.

The mechanical properties of certain types of fibrin films make them suitable for use as dura-substitutes and in the prevention of meningocerebral adhesions. The duration of their persistence in the body can be adjusted by suitable treatments. They have been used in neurosurgical operations and appear to be excellent materials for these purposes, patients having been

followed for as long as fifteen months without the appearance of unfavorable sequelae. Other types of fibrin film and of fibrinogen plastics are being tested for other surgical applications.

Albumin and the immune globulins, fibrin foam and thrombin have been licensed under the National Institute of Health, and have been prepared in large amounts under contract with the Navy. Fibrin films, which were developed in our laboratory several years ago, presented a considerable problem because a satisfactory sterilization procedure adaptable to their large scale preparation remained to be developed. I am happy to be able to report that a satisfactory procedure in which the films are sterilized by steam in the final container has been developed and is making large numbers of films prepared in this way available for final appraisal.

Summary

In summary, the knowledge of blood proteins and their therapeutic value that has been gained in this war enables us to approach the future with a very different view than was possible a decade ago to even the most farsighted physician who was taking advantage of all scientific knowledge then available (especially that contributed by Landsteiner on blood grouping) in arranging for safe blood transfusion from donor to patient.

In the past, repeated blood transfusions had, of course, often been administered but not to the extent that our British colleagues practiced, using blood and serum banks, during the first years of this war. Their experience from such multiple transfusions indicated on the one hand the value, in certain conditions, of injecting large amounts of plasma proteins, and on the other the need for red cells when such large amounts of serum proteins were administered.

The program of the American Red Cross has demonstrated the extent to which carefully controlled, centralized, collection and processing centers can contribute both to the safety of the donor and to that of the recipient of one or another of the products prepared from the blood contributed. The record that has been achieved is a fine one and redounds to the credit of the American Red Cross and the pharmaceutical laboratories that have loyally collaborated in this nationwide undertaking.

The need for multiple transfusions makes it necessary to use the blood contributed by a number of donors in treating a single individual. Indeed, whether we are dealing with the colloidal properties of the plasma proteins in shock or with the immune properties of the gamma globulins—which contribute but little to the osmotic efficiency of the plasma—the therapeutic value of massive doses under certain conditions has become apparent.

The control of infectious diseases by passive immunization with gamma globulins may well be the largest need of a civilian population for a blood derivative and one to which a civilian population can be expected to contribute in the interests of the modification and control of a children's disease, such as measles, until such time as the immunity of each growing generation is achieved.

In the fractionation of blood to obtain the gamma globulins, the red cells and the proteins which they contain, as well as the other plasma proteins, become available for the therapeutic uses for which they are needed; the albumin for the treatment of shock, hypoproteinemia, edema and—prepared in the salt-poor condition—as a diuretic agent; fibrin foam and thrombin as a hemostatic agent; fibrin film as a substitute for a natural body membrane and the large number of other cellular, protein and lipid components, whose physiological function and chemical nature are only beginning to be explored for whatever therapeutic purposes may prove the most important.

Starting with the assumption, which must for the present remain an assumption, that every part of human blood performs an important natural function, we must continue, as we have begun, to make available as many as possible of its diverse cellular, protein and lipid components, separated and concentrated as specific therapeutic agents of value in different conditions, in the interests of the most effective and economical use by society of the blood which it contributes.

Adapted from an address presented to the American Pharmaceutical Manufacturers Association, New York. December, 1944.

The observations on which this appraisal is based involve so many fields and have appeared in such diverse publications that even a partial bibliography would be longer than this address. "A Plan for Collection, Transportation and Administration of Whole Blood and of Plasma in Warfare," by DeGowin and Hardin (*War Medicine*, 1:326, 1941), reviews the earlier experience on blood transfusions; "The Preparation and Preservation of Human Plasma," by Strumia, McGraw, and Reichel (*Am. J. Clin. Path.*, 11: 480, 1941), that on the drying of plasma from the frozen state; and "The Properties and Functions of the Plasma Proteins," (*Chem. Rev.*, 28:395, 1941), the methods available for their separation and purification. Other references are given in a more recent report on "Blood, Blood Derivatives, and Blood Substitutes" (*Proc. Am. Phil. Soc.*, 88:159, 1944); in a series of twenty-three communications from different laboratories under the title, "Chemical, Clinical and Immunological Studies on the Products of Human Plasma Fractionation," (*J. Clin. Inv.*, 23:1944); and in four clinical papers that have appeared lately (*J. Am. Med Assoc.*, 126:469, 674, 680, and 944, 1944).

TAX DRAWBACK

A. PH. A. KIT AVAILABLE TO HELP PHARMACISTS GET $11.40 REFUND PER WINE GALLON OF ALCOHOL

MANY pharmacists are finding it profitable to obtain the government refund of two-thirds of the alcohol tax paid on spirits used for medicinal purposes. This alcohol tax "drawback" amounts to $11.40 per wine gallon of U. S. P. alcohol, a sum that will reduce overhead significantly in many pharmacies and manufacturing laboratories. To make the procedure as simple as possible, THIS JOURNAL provides a kit which contains all the information and forms you will need to prepare the quarterly claims.

In June pharmacists should:

1. File their claims for the January–March quarter if they hold a special tax stamp covering the 1944–45 fiscal year. Claims must be filed in the calendar quarter following the quarter in which the alcohol was used; so if your claim reaches the Collector of Internal Revenue in your district after June 30 it will not be honored.

2. Send fifty cents, a cost price, to THIS JOURNAL, 2215 Constitution Ave., Washington 7, D. C., for the kit of materials needed to file claims for alcohol tax refunds during the 1945–46 fiscal year.

3. Apply to the Collector of Internal Revenue on Form 11 for the special annual tax stamp to become eligible for drawback claims during the the period of July 1, 1945, to June 30, 1946. This stamp may be obtained any time prior to filing your first claim. It is important to remember that the new special tax stamp will cover the alcohol used during the April–June, 1945, quarter, since this will actually be claimed for drawback after the start of the fiscal year; the comparable quarter in 1946 will likewise be covered by the special tax stamp for the next fiscal year instead of by the current stamp.

Even though two or more pharmacies or laboratories are under a single ownership a separate tax stamp (and claim) is required for each place where spirits are used and a tax refund is desired.

If the total annual use of alcohol does not exceed 25 proof gallons[1] the special tax will be $25; if not more than 50 gallons, $50; and if more than 50 gallons, $100.

Here is how to tell if it will be worth while to obtain the special tax stamp, which makes you eligible to get the tax drawback: Estimate the amount of distilled spirits, in terms of proof gallons[1] of alcohol, used annually in your pharmacy or laboratory. Multiply the number of proof gallons by the $6 per proof gallon "drawback." Then compare this total refund with the special tax-stamp price, given above, that corresponds to the amount of alcohol you expect to use during the year. The difference will be your net refund.

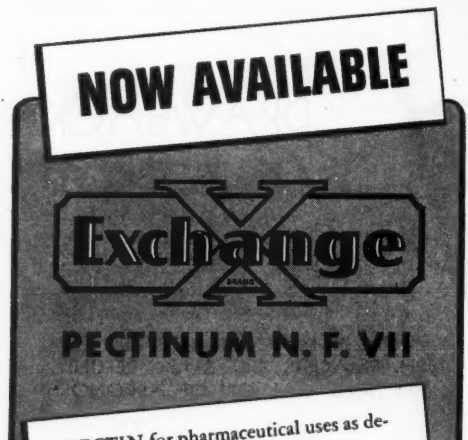
In addition to instructions for keeping the necessary records, carbon paper for duplicate copies and a file folder, the alcohol tax kit made available by the AMERICAN PHARMACEUTICAL ASSOCIATION contains the following forms:

1. Form 11 of the Bureau of Internal Revenue, used to order the special tax stamp which is good for the four quarterly claims of the 1945–46 fiscal year.

2. Form 843 of the Bureau of Internal Revenue, which is the formal claim filed each quarter asking the government for a tax drawback.

3. A year's supply of the forms that are submitted with each quarterly claim to prove your right to the drawback requested. These contain supporting data divided into five parts: (*a*) information showing that the pharmacist holds the proper special tax stamp; (*b*) record of distilled spirits received and of tax stamps on the containers; (*c*) record of

[1] A proof gallon is one gallon of spirits containing 50% of alcohol by volume, or 100 proof. A wine gallon of U. S. P. alcohol is converted to proof gallons by multiplying by 1.9.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2. Symposium on Pectin & Pectin Pastes, Bulletin of the National Formulary Committee, Vol. 9, No. 1, Oct. 1940.
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Please find enclosed $____ for which please send me ____ alcohol tax drawback kits.

Note: Each kit will supply the instructions and forms needed for four quarterly claims. Even though more than one pharmacy or laboratory is under a single ownership, one kit (and one claim) will be needed for each place in which alcohol is used and the drawback is desired. Pharmacists conducting extensive manufacturing operations may obtain additional manufacturing records (Part 3) as needed at ten cents for each two additional triplicate forms.

_____
(name)

_____
(street)

_____
(city and state)

spirits used in prescriptions or preparations; Only one entry need be made for all alcohol used in prescriptions during the quarter but separate entries and additional information are required for manufactured preparations.] (*d*) quarterly inventory statement and summary of alcohol use; (*e*) record of alcohol used in intermediates that are not to be dispensed or sold as finished products.

The latter record, covering intermediates, is a new requirement inaugurated in 1945. It should be disregarded by all pharmacists whose manufacturing operations do not involve the preparation of intermediate products, *i. e.*, products to be used as ingredients in other products before dispensing or distribution.

As a further service to dispensing pharmacists, THIS JOURNAL will endeavor to supply authoritative information on specific questions which may arise in keeping records for alcohol drawback claims.

PHARMACY SURVEY BEGUN IN PUBLIC HEALTH SERVICE

At the request of the U. S. Public Health Service, the AMERICAN PHARMACEUTICAL ASSOCIATION is now making an informal survey of the activities of the Service to determine whether more extensive and effective use can be made of pharmacists.

The survey will be in charge of a committee headed by Dr. Robert P. Fischelis, A. PH. A. secretary. For the purpose of making the survey, Dr. Fischelis has been commissioned in the grade of Senior Pharmacist, Reserve, equivalent to commander in the Navy or lieutenant colonel in the Army which is the highest rank so far given any pharmacist in the U. S. Public Health Service.

Dr. Fischelis has already visited a number of marine hospitals and other Public Health Service stations as a preliminary to formulating a plan for undertaking the survey. Upon completion of the preliminary report, a committee to be appointed by the AMERICAN PHARMACEUTICAL ASSOCIATION will meet to work out details and formulate the necessary procedures.

It is anticipated that several months will be required to complete the survey, after which a plan for better utilization of pharmacists will be submitted to the Surgeon General for consideration.

Typical Days

A GLIMPSE AT THE SECRETARY'S DIARY

APRIL 1ST

THIS month of April in 1945 has brought summer heat, and with it all the buds and early flowers in great profusion, so that Constitution Avenue is a riot of color and truly a sight to behold.

Here on the A. PH. A. grounds the magnolias, marking the far ends of the shrubbery that offsets the white marble of our building, are in full bloom.

APRIL 2ND

This day in New York to lunch with F. W. Nitardy at the Chemists Club, and to make final arrangements for the installation of the Squibb Ancient Pharmacy at the National Museum; next, to the American Foundation for Pharmaceutical Education for the annual meeting, at which capable, public spirited H. A. B. Dunning was elected to a five-year term on the Board of Directors representing A. PH. A. Impressive reports of officers indicated that the acorn planted by Dean Ernest Little a few years ago has grown to a sturdy oak which will provide continuing protection for pharmaceutical education—if the Foundation will stick to its main objective.

APRIL 3RD

Delighted to greet former A. PH. A. treasurer Charles W. Holton, who stopped on his way to Arlington to visit one of his daughters and her husband, who does his bit for the Navy. There came much good advice from C. W. H., an expert on gardening, as to how to treat our ailing lawn and the infested boxwoods, which need nicotine treatment, but not from cigarettes.

APRIL 4TH

To Baltimore to meet Treasurer Hugo Schaefer and our auditor at the vaults of the Baltimore National Bank, where we found the ASSOCIATION'S bonds safely tucked away, and clipped coupons for deposit in the general account. Here we also had the opportunity to see the original charter of the ASSOCIATION, and many another interesting document deposited for safe keeping, including a sealed message for the 1952 president of the A. PH. A. from the late ex-president, George M. Beringer, to be opened when the ASSOCIATION celebrates its centennial.

APRIL 6TH

Conferred at length with Dr. M. H. Trytten, director of the Office of Scientific Personnel, National Research Council, at the National Academy of Sciences on the advisability of joining other scientific groups in claiming deferments for students of pharmacy as a part of the creation of a general pool of science students. To Baltimore to meet Deans Little and DuMez to complete a report to the American Council on Pharmaceutical Education for the revision of standards and rules of accreditation, working far, far into the night and pausing occasionally for spirited interchanges of strongly held views which yielded to necessary compromises and a smooth report.

APRIL 7TH

An all-day meeting of the American Council on Pharmaceutical Education with Leigh, Little, DuMez, Swain, Costello, Beal, Christensen, McGrath and Fischelis in attendance. This being the annual meeting, Costello, Little and DuMez were elected chairman, vice-chairman and secretary-treasurer, respectively. Sooner or later this Council must function with a full-time executive officer.

APRIL 10TH

A welcome visitor this day was O. P. D. editor Hugh Craig (N. Y.), and he brought for the library

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a most interesting copy of the *Pharmacopœia Hispana*, published in 1817 and honeycombed in spots by the most artistic worm holes. There must be a Pharmacopœial species of bookworms, for these had created artistic designs on various pages, carefully skirting around decimal points, but raising havoc with some of the titles. We could recognize the monographs of drugs, because this Spanish Pharmacopœia was written in Latin but, as Justin Powers well points out, it was an 1817 Pharmacopœia treating of Aconitum and Belladonna and not of Sulfanilamidum and Stomachus.

APRIL 12TH

As December 7, 1941, was a day of infamy, so April 12, 1945, was one of world tragedy. Justin Powers sat in my office late this afternoon discussing N. F. and other A. PH. A. problems, when a telephone message bringing the news of President Roosevelt's sudden death left us both speechless and not well able to continue our routine tasks. Time alone holds the answer to this momentous turn in our national affairs.

APRIL 16TH

Tonight on the way by train to Buffalo to meet with Western New York and Buffalo University A. PH. A. Branches the next day.

APRIL 17TH

A miracle to be recorded: A Pennsylvania R. R. train from Washington, due in Buffalo at 7:55 a.m., arrived at 7:25 a.m.—on the day it was due. At luncheon with Dean Lemon and Prof. Wyss; reviewed the ills of pharmacy to our hearts' content and decided things were not too bad. All afternoon at the U. S. Marine Hospital to inspect the pharmacy and obtain information on how pharmacists might be used to better advantage. At night there came students and alumni of U. of Buffalo to the Park Lane Hotel, where Wyss presided as chairman of the Western N. Y. Branch of the A. PH. A., but soon turned affairs over to Gerald E. Elliott, retiring president of the U. of Buffalo Student Branch.

Congratulations to young Elliott for a neat job of toastmastering and to Hazel M. Menzie on whom falls the burden of carrying on for the Student Branch into the next year. And she will do it well.

APRIL 18TH

On to Cleveland where there was opportunity to talk in person or by telephone to Levy, Cermak,

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Geggenheimer, Matusek, Miller and others among the stalwarts carrying on for the Northern Ohio Druggists' Association. We were able to remind Geggenheimer of his prediction that Cleveland's mayor would become Ohio's governor, made the night he presided so handsomely over the banquet at our Cleveland convention. What was considered a "slip" at the time, turned out to be a prophecy fulfilled. A half hour's chat with Western Reserve's President Leuttner on the pharmacy college situation, inspection of the U. S. Marine Hospital and a long and serious discussion with Evlyn Gray Scott at St. Luke's on the future of hospital pharmacy and hospital pharmacists ended a busy day.

APRIL 19TH

To Pittsburgh via P. R. R., and late in arriving as usual. This was a great day for Duquesne University for it marked the twentieth anniversay of the founding of its pharmacy school. Hugh Muldoon, who officiated at the birth of this School of Pharmacy is still its popular dean. Alumni and alumnae from far and wide, faculty members and University administrative officers gathered around the festive board at the William Penn Hotel for as well managed a celebration as we have seen in keeping with these war times, and it was a pleasure to participate by talking to those assembled on "The Road to Better Things in Pharmacy."

CONVENTION POSTPONED

Indefinite postponement of the 1945 meeting of the American Pharmaceutical Association was authorized by the Council at its meeting on May 12 and 13. The action was taken by unanimous vote since war conditions offered little hope that the ODT ban on conventions would be lifted in time to make the necessary arrangements this year. The Council emphasized that plans would be made for a meeting as soon as the war emergency and the national welfare permit. Officers, committee chairmen and members are asked to submit the customary reports and papers by July 31 for publication and for action by the Council, which is constituted to act for the Association between meetings.

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